



## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

10/528475

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0000053940	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/EP2003/009946	International filing date (day/month/year) 08 September 2003 (08.09.2003)	Priority date (day/month/year) 20 September 2002 (20.09.2002)
International Patent Classification (IPC) or national classification and IPC C07D 221/18		
Applicant BASF AKTIENGESELLSCHAFT		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>	
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>	

Date of submission of the demand 02 December 2003 (02.12.2003)	Date of completion of this report 16 December 2004 (16.12.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages \_\_\_\_\_ 1-44 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ 1-14 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

## 2. Citations and explanations

The following documents are considered relevant prior art:

(A) Dyes and Pigments 1991, 16(1), 19-25

(B) DE 10038672

Novelty

The present 9-cyano-substituted perylene-3,4-dicarboxylic acid imides and the 9-bromo- or 9-cyano-substituted perylene-3,4-dicarboxylic acid anhydrides appear to be novel in relation to the cited prior art and to thus satisfy PCT Article 33(2).

Inventive step

The present application appears to address the problem of developing further perylene dicarboxylic acid derivatives that can be used, *inter alia*, as dyes and photoconductors.

(A) and (B) are regarded as the closest prior art.

(B) discloses perylene dicarboxylic acid imides

which may carry a cyano group as substituents  $R^1$  to  $R^5$ , the substituent in position 9, that is  $R^2$ , being linked by a carbonyl group to the perylene backbone. In all the examples in (B), the perylene backbone is substituted in position 9 by a carboxyl derivative. The cyano group is generally regarded as a carboxyl derivative. In addition, (A) discloses 9-bromo-substituted perylene dicarboxylic acid imides that can be used as dyes. The cyano group is a pseudo-halide. A person skilled in the art is therefore referred to the cyano group by both (B) and (A). It was therefore to be expected that cyano-substituted perylene dicarboxylic acid imides would also have the desired properties. Consequently, an inventive step (PCT Article 33(3)) could be based only on the present compounds having a property that would be surprising in relation to the closest prior art. Since (A) shows bromium derivative absorption in sulphuric acid only, a direct comparison cannot be made with the current maximum absorption rates in chloroform. In addition, the slight hypsochromic shift of approximately 1 to 7 nm between the absorption and fluorescence data disclosed in (B) and that of the current application appears not to be an unexpected variation. The applicant should note that in order to be able to make any meaningful comparison, the only difference between the current compound and the comparative compound from the closest prior art should be the substitution in position 9. No such comparison is currently possible and no unexpected effect of the current substances can currently be determined.

As long as an inventive step is not acknowledged in relation to the compounds from claim 1, an inventive

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step cannot be acknowledged in relation to the  
intermediate products from claim 6.